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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,254	08/21/2003	Thierry Lucidarme	MTR.0090US	7563

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EXAMINER	
YUN, EUGENE	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/645,254	LUCIDARME ET AL.	
	Examiner	Art Unit	
	Eugene Yun	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-11 and 13-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-11 and 13-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4-11, and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jalali et al. (US 6,154,659) in view of Zirwas (US 6,591,106).

Referring to Claim 1, Jalali teaches a method of transmitting a radio signal with polarization diversity (see col. 18, lines 52-55), comprising the steps of: transmitting a plurality of versions of the radio signal having different polarizations from a first station to a second station (see col. 17, lines 45-48); and adaptively controlling respective transmission powers of said versions of the radio signal (see col. 3, lines 16-23) according to measurements carried out by the first station on signals transmitted by the second station (see col. 3, lines 8-15).

Jalali does not teach an optimal transmission power distribution of the radio signal between the polarizations estimated on the basis of minimizing a cost function relative to a quality of the signal received by the second station, and the transmission power is distributed between said versions of the radio signal in accordance with the estimated distribution. Zirwas teaches an optimal transmission power distribution of the radio signal between the polarizations estimated on the basis of minimizing a cost function relative to a quality of the signal received by the second station, and the

transmission power is distributed between said versions of the radio signal in accordance with the estimated distribution (see col. 2, line 66 to col. 3, line 9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Zirwas to said device of Jalali in order to consume transmission power for shorter range transmissions.

Claim 10 has similar limitations as claim 1.

Referring to Claim 2, Jalali also teaches said versions of the radio signal transmitted simultaneously (see col. 17, lines 29-31).

Referring to Claim 4, Jalali also teaches the cost function to be minimized measures an error probability in receive mode (see col. 25, lines 12-16).

Referring to Claim 5, Jalali also teaches transmission parameters for signals transmitted by the second station to the first station and parameters for the receiving by the second station of said versions of the radio signal transmitted with polarization diversity by the first station are measured, and said measured parameters are transmitted to the first station in order to estimate the optimal transmission power distribution (see col. 3, lines 60-65).

Referring to Claim 6, Jalali also teaches said second station is designed to transmit with polarization diversity, the method further comprising the steps of:

- for each transmit polarization, measuring a mean power contribution of at least some of the signals transmitted by the second station (see col. 9, lines 57-65);

- for at least some of the signals transmitted in a defined polarization by the first station to the second station, measuring a mean power contribution of the

noise that interferes in receive mode with the useful signal relating to said transmitted signal (see col. 10, lines 5-15); and

- for each transmit polarization, evaluating at the first station power transfer coefficients in a radio propagation channel of at least some of the signals transmitted by the second station (see col. 10, lines 35-42).

Referring to Claim 7, Jalali also teaches the mean noise power contribution and mean transmission power contribution measurement steps are executed in the second station and the measured mean noise power contribution and mean transmission power contribution are transmitted to the first station for estimating the optimal distribution of the transmission power (see col. 10, lines 43-52)

Referring to Claim 8, Jalali also teaches said second station is designed to transmit with polarization diversity, wherein the mean power contribution of the signals transmitted by the second station is substantially identical for each polarization, the method further comprising the steps of:

measuring a, mean power contribution of at least some of the signals transmitted by the second station (see col. 9, lines 57-65);

for at least some of the signals transmitted in a defined polarization by the first station to the second station, measuring a mean power contribution of the noise that interferes in receive mode with the useful signal relating to said transmitted signal (see col. 10, lines 5-15); and

for each transmit polarization, evaluating at the first station power transfer coefficients in a radio propagation channel of at least some of the signals transmitted by the second station (see col. 10, lines 35-42).

Referring to Claim 9, Jalali also teaches the mean noise power contribution and mean transmission power contribution measurement steps are executed in the second station and the measured mean noise power contribution and mean transmission power contribution are transmitted to the first station for estimating the optimal distribution of the transmission power (see col. 10, lines 44-52).

Referring to Claim 11, Jalali also teaches the transmission means are coupled to n_pol antennas, n_pol being a number greater than or equal to two, and are designed to transmit from each antenna a radio signal in one polarization from among n_pol polarizations (see col. 17, lines 29-31).

Referring to Claim 13, Jalali also teaches the means for estimating the optimal transmission power distribution comprise means for minimizing an error probability in receive mode by the remote station (see col. 25, lines 12-16).

Referring to Claim 14, Jalali also teaches means for obtaining parameters for the transmitting of signals by the remote signal and for the receiving of signals transmitted to the remote station, cooperating with the means for estimating the optimal transmission power distribution (see col. 3, lines 60-65).

Referring to Claim 15, Jalali also teaches receiving means coupled to the n_pol antennas sensitive in receive mode to the n_pol polarizations, and wherein the means for estimating the optimal transmission power distribution cooperate with means for

obtaining parameters for the transmitting of signals by the remote station and for the receiving of signals transmitted to the remote station and with means for obtaining parameters for the receiving of signals transmitted by the remote station (see col. 3, lines 60-65).

Referring to Claim 16, Jalali also teaches means for obtaining, for each of the n_pol polarizations, a mean power contribution of at least some of the signals transmitted by the remote station and means for estimating power transfer coefficients for signals transmitted by the remote station in each of the n_pol polarizations and received on each of the n_pol antennas (see col. 18, lines 28-36).

Referring to Claim 17, Jalali also teaches means for obtaining a mean power contribution of at least some of the signals transmitted by the remote station and means for determining power transfer coefficients for signals transmitted by the remote station in each of the n_pol polarizations and received on each of the n_pol antennas (see col. 18, lines 28-36).

Referring to Claim 18, Jalali also teaches means for estimating symbols transmitted by the remote station in each of the n_pol polarizations, and received on each of the n_pol antennas, and means for combining the estimated symbols (see col. 18, lines 28-36).

Referring to Claim 19, Jalali also teaches means for obtaining, for at least one of the signals transmitted to the remote station in one defined polarization among n_pol, a measurement of a mean power contribution of the noise that interferes with the useful signal relating to said transmitted signal (see col. 9, lines 57-65).

Referring to Claim 20, Jalali also teaches means for measuring, for each of the n_pol transmission polarizations, a mean power contribution of at least some of the signals transmitted by the remote station (see col. 10, lines 5-15).

Referring to Claim 21, Jalali also teaches that n_pol=2 (see col. 18, lines 35-36).

Response to Arguments

3. Applicant's arguments with respect to claims 1, 2, 4-11, and 13-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Yun whose telephone number is (571) 272-7860. The examiner can normally be reached on 9:00am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571)272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eugene Yun
Examiner
Art Unit 2618

EY

MATTHEW ANDERSON
SUPERVISORY PATENT EXAMINER